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ABSTRACT

The inferior performance of external locus of control (LOC) subjects (Ss) on achievement tests has been attributed by many researchers to cognitive and perceptual deficiencies. Several studies have shown that advance organizers (AO) which provide optimal anchorage and mobilize existing relevant concepts, facilitate learning of verbal material. This study tested the hypothesis that learning of an unfamiliar passage by sixth-grade external LOC Ss can be improved by the help of AO. Thirty-three lower socioeconomic status (SES) black Ss and 34 Jewish upper-middle SES Ss were identified as either external or internal LOC. Half of each LOC group received an introductory passage with concrete examples and inclusive terms (the AO group) while the introductory passage of the other half (control group) did not have any AO. Both groups received the same unfamiliar study passage followed by a 10-item test on the study passage. An analysis of variance on the scores of the latter test indicated that while the main effect of AO was not significant, AO had a significant effect only on the retention ability of lower SES students with an external LOC. There is a need for further studies using a larger number of Ss representing various grade levels. (Author/SE)

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EFFECT OF AN ADVANCE ORGANIZER UPON LEARNING FOR SIXTH-GRADE CHILDREN MAINTAINING AN EXTERNAL LOCUS OF CONTROL ORIENTATION

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A student's generalized behavior-reinforcement expectancies contains a dimension for internal versus external control of reinforcement (Rotter, 1966). Internal control is illustrated when a pupil perceives that the consequences of an event are due to his own actions and therefore under his personal control. External control is illustrated by the conviction that events that happen are a result of fate, luck, superstition and other factors beyond one's control. The Crandalls (Crandall, Katovsky and Crandall, 1965) have developed a measure of the locus of control construct for use with children that focuses on academic achievement situations. A number of investigators have reported that degree of internality on the Intellectual Achievement Responsibility (IAR) scale of the Crandalls is positively correlated with school achievement. (Segal, 1972)

Persons who maintain external-control expectancies demonstrate a lack of goal-striving behavior. In achievement situations they exhibit withdrawal, apathy and overall avoidance behaviors (Lefcourt, 1966; Rotter,1966; Joe, 1971). Lefcourt (1967) has suggested that this is due to cognitive and perceptual deficiencies rather than a lack of motivation for the goals. A series of studies have reflected cognitive and perceptual differences between internals and externals in learning tasks. Lefcourt, Lewis and Silverman (1968) found that there was a less distinct tendency of externals to accept or reject task structuring, a reflection perhaps of their lesser activity in perceiving opportunities for control than internals. Davis and Phares (1967) demonstrated differences between internals

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and externals actively seeking additional relevant information. Phares (1968) found that internals were more effective in the utilization of information.

Lefcourt (1967) says "... the individual with external control expectancies does not adequately search for significant opportunities. It is possible that he fails to maintain the kind of internal dialogue that would facilitate the cognitive sorting and categorizing of the situations ..." It is hypothesized here that a student with an external control orientation has inadequate search strategies for facilitating the subsumption process in information processing. As a result, he does not process and store information efficiently. He is unable to exploit his existing knowledge as an ideational matrix for the interpretation and storage of new information. This hypothesis is based on the assumption that new meaningful material becomes incorporated into cognitive structure most typically by a subordinate relationship of the new learning material to cognitive structure (Ausubel, 1968). It is further hypothesized that the learning of these students who have an external locus of control can be facilitated.

The existence of relevant anchoring ideas in cognitive structure is the primary prerequisite for subsequent meaningful learning. If they are not available or are available but their relevance is not recognized by the learner, suitable organizers can be presented in advance of the learning material in order to insure that relevant anchoring ideas will be available (Ausubel, 1968). Advance organizers (AO) are materials at a high level of generality and inclusiveness whose relevance to the learning task are made explicit. Organizers facilitate learning by: (1) mobilizing relevant concepts already established, (2) providing optimal anchorage and (3) making rote memorization unnecessary. A number of research studies have shown the general facilitating effects of an AO on learning and retention of meaningful verbal material (Ausubel, 1960; Ausubel and Fitzgerald, 1961; Ausubel and Youssef, 1963; Scandura and Wells, 1967; Grotelueschen and Sjogren, 1968; Allen, 1970). An AO may differentially benefit high ability students in a complex learning task (Grotelueschen and Sjogren, 1968) and low ability students with less background

knowledge and/or in a simpler learning task (Ausubel and Fitzgerald, 1962). The subjects in these studies, with the exception of one which used ninth graders, have been undergraduates.

The present study was designed to test the hypothesis that the learning of an unfamiliar passage in Economics by sixth-grade children with an external locus of control orientation can be improved.

METHOD

Subjects

The subjects were 67 sixth-grade students (26 boys and 40 girls) from five classes in two schools. Thirty-three of these were drawn from a public intermediate school serving a predominantly Black population in an area of lower socio-economic status in New York City. The remaining 34 were obtained from a Jewish parochial school with a White, upper-middle class student body. The experiment was conducted separately in each class. A Black examiner was used with Black students and a White examiner with White students. Both examiners were trained by the experimenter.

Learning Passage, Organizer and Measuring Instruments

The learning material used in this study was adapted from student readings in an experimental unit on Production and Marketing developed by the Industrial Relations Center at the University of Chicago for its Elementary School Economics program. These materials had originally been developed for the fifth grade.

The learning passage (approximately 2,000 words) dealt with the production process and its relation to work. This particular topic was selected because it was anticipated that the principles would be unfamiliar to students in the middle elementary grades. The use of unfamiliar learning material made it possible for all subjects to start from approximately the same base line in learning the given passage.

Knowledge of the passage was tested by a 10-item multiple-choice examination with a corrected split-half reliability of .68. The

questions covered principles and facts. Scores on the test showed a satisfactory range and were approximately normally distributed. Since it was intended as a power test, no time limit was imposed.

Two types of introductory passages were used, each about 400 words in length. The experimental group studied an expository organizer which provided ideational scaffolding for the learning passage. Using a variety of concrete exemplars, it presented the concepts in more general and inclusive terms, with questions as integrating devices. The control group studied an historical introduction which had no organizational properties in relation to the learning passage. Both introductory passages encouraged active learning by requiring some answers to be filled in. No information was included in either of the introductory passages which could be considered an aid in answering questions on the learning material. The introductory passages were written by the experimenter.

A 34-item forced-choice Intellectual Achievement Responsibility instrument (IAR) was used to measure locus of control. This academic-specific measure has a reported test-retest reliability of .65 to .69 (Crandall et al, 1965). Total scores did not reveal significant sex differences, although two studies in the literature have found sex differences (Crandall et al, 1965; Solomon, 1969). Scores showed a satisfactory range of variability and approximated a normal distribution. Subjects were divided on the basis of this distribution.

Procedure

Within each of the 5 classes, subjects were randomly assigned to an experimental and a control group. The experimental and control treatments were then administered simultaneously within each section. This procedure permitted holding class characteristics and situational variables constant for both groups. Each group read its assigned introductory passage followed by the learning passage on the production process. Only one reading was permitted. Following this, everyone took the multiple-choice test. The experiment was conducted during the regular class session (45 minutes)

allowing a maximum of 30 minutes to complete the reading. Only those subjects who completed th e reading were included in the study.

Scores on the IAR were available for 47 Low SES subjects. The test had been previously administered as part of an evaluation project. For the Middle SES subjects, the IAR scale was administered two days prior to the experimentation. For the purpose of this study, scores on the IAR scale were divided at the median for the combined group (24.4) such that all subjects with scores between zero and 23 were categorized as "external control" while scores of 24 and above were labeled "internal control". ANOVA was used to compare the performance of the groups with differences being accepted as significant at the .05 confidence level.

RESULTS AND DISCUSSION

It was predicted that an AO would significantly affect the learning of students with an external locus of control orientation. This hypothesis was tested in a 2 x 2 x 2 analysis of variance design. The three factors were SES, Treatment, and Locus of Control orientation. Table 1 contains the mean scores on the learning passage for each of the conditions.

Insert Table 1 here

The results of the analysis of variance conducted on the learning scores indicated significanr main effects for SES ($p < .01$) and locus of control orientation (LOC) ($p < .05$) but not for treatment. However, there was a significant interaction between SES, treatment and LOC ($p = .05$). Also, one of the two-way interactions, SES x LOC was significant ($p < .05$). The analysis is shown in Table 2.

Insert Table 2 here

As indicated in Table 2, an AO had a significant facilitating effect ($p = .05$) on the learning performance of low SES students with an external LOC. The hypothesis was not upheld for the middle SES group. Post hoc analysis of the data, regrouped by a gross estimate of ability based on class assignment, did not uphold the hypothesis. The data are shown in Table 3.

Insert Table 3 here

It is still possible, however, that the middle SES group may have had a broader background of knowledge relevant to the task at hand.

Post hoc analysis of the LOC scores suggests that the meaning of the Exterbal score may be different for each of the SES levels. These data are presented in Table 4.

Insert Table 4 here

An examination of the LOC subscores indicates that middle SES students with an external LOC assume greater blame for negative events (I- score) than they take credit for positive events (I+ score). This pattern is the reverse of that demonstrated by low SES students with an external LOC. This same picture is repeated for those students who manifested an Internal LOC at each of the SES levels.

These post hoc analyses suggest that the finding that an AO has a significant facilitating effect only on the learning performance of low SES students with an external LOC is a tenable one. It is further supported by two studies (Katz, 1967; Crandall et al, 1965) which reported no relationship between IAR and achievement behavior for middle SES (Black and White) sixth-grade children.

The findings should be replicated over a wider range of grades (4-6) using a more representative sample. This grade range is suggested to insure groups of children whose background knowledge of the subject matter is more limited. Consideration should be given to using multivariate analysis and considering grade, sex, race, SES, verbal ability, LOC subscores and treatment as possible predictor variables. Both learning and retention should be included as criterion measures.

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Table 1

MEAN LEARNING SCORES

Grouped by Treatment, LOC Orientation and SES Level

Treatment	LOC Orientation	Low SES	Middle SES	Total
AO	Internal	6.4	8.6	7.9
	External	5.4	7.7	6.2
Control	Internal	6.7	7.6	7.1
	External	3.6	8.2	5.9

Table 2

ANALYSIS OF VARIANCE FOR EFFECT OF

ADVANCE ORGANIZER ON LEARNING PERFORMANCE

Source	df	MS	F Ratio
SES	1	90.68	32.79 **
Treatment	1	3.27	1.18
SES x Treatment	1	1.05	
LOC Orientation	1	17.81	6.44 *
SES x LOC	1	12.61	4.56 *
Treatment x LOC	1	0.27	
SES x Treatment x LOC	1	11.05	4.00 *
Within SS	59	2177	
	66		

* $p \leq .05$

** $p < .01$

Table 3
POST HOC ANALYSIS OF VARIANCE FOR
EFFECT OF ADVANCE ORGANIZER ON
LEARNING PERFORMANCE

Source	df	MS	F Ratio
Ability	1	64.11	20.69 **
Treatment	1	4.20	1.36
Ability x Treatment	1	0.05	
LOC Orientation	1	26.47	8.54 **
Ability x LOC	1	10.64	3.43
Treatment x LOC	1	2.18	
Ability x Treatment x LOC	1	9.54	3.08
Within SS	59	3.10	
	66		

** $p < .01$

Table 4
MEAN IAR SUBSCORES
Grouped by LOC Orientation and SES Level

IAR Subscore	External		Internal	
	Low SES	Middle SES	Low SES	Middle SES
I+	10.17	9.40	14.00	12.83
I-	9.50	12.20	12.78	14.03
Total I	19.67	21.60	26.78	26.86